Name: Abby Simons Date: 6/28/10

Lesson Title: Introduction to the Order of Operations Unit Title: Week 2

Grade Level: 8th

Objectives:

* Students will be able to describe the Lebombo Bone
* Students will be able to describe the steps of solving word problems
* Students will be able to recite the order of operations
* Students will be able to compute expressions using the order of operations

Set Induction:

* Take attendance
* Hand back any papers
* Students will take out their homework logs and fill in tonight’s homework and I will come around and sign it.
* Discuss the order of operations with the students. Ask them if they have seen it before. Where? In what context? How it was used? What the order of operations are…if given an expression with multiple operations in it, you must follow set rules for finding the value of the expression. Example expression 5 \* 4 + 8 … we will learn how to solve this expression by doing the operations in a certain order.
* (3 – 5 min)

Content Outline and Learning Activities:

* First The Mathematical Topic of the Week!! Bring up Lebombo powerpoint on smartboard.
  + Information to discuss on powerpoint notes section.
  + (10 min)
* Students who didn’t finish the word problems from Friday 6/25/10 will finish now. They will be given 5 -7 min to finish and will then hand it in to me when it is complete. (5 -7 min)
  + The other students who finished the problems will complete the following problems on the board and write them into their notebooks.
    - Problem 1. Ben went to Barnes and Nobles over the weekend and wanted to buy the Twilight Series. The previous week he worked for 10 hours, making a total of $100. Does Ben have enough money to buy each of the 4 books in the Twilight Series that cost $15? If he does, how much money does he have left over?
      * 4 \* 15 = 60. Yes enough to buy the four books. Left over… 100 – 60 = $40 left.
    - Problem 2. Mary went swimming in the pool over the weekend. She swam a total of 20 laps. If each lap is equal to 13 yards, how many total yards did Mary swim?
      * 13 \* 20 = 260 yards
* Talk to the students about the word problem exercises that we have been doing but will continue to keep doing throughout the rest of the summer. Eventually when we learn more algebra they will start making word problems themselves to test their knowledge of the material. Hand out worksheet for students to read and keep in their notebook so they can use it to help them create their own mathematical word problems…Word Problem Help Guide (5 min)
* Explain to the students the reason why there is an order of operations (which they will be introduced to today). When you perform an arithmetic operation (multiplication, division, addition and subtraction), there can only be one correct answer. Mathematicians came up with a system that prevents confusion when calculating expressions with more than one operation. (1 min)
* Before playing the order of operations game (which only uses, multiplication, division, subtraction, and addition) go over rules for evaluating an expression when the expression has these operations. Do multiplication and division (whichever comes first from left to right) then do addition and subtraction (whichever comes first from left to right). There are other operations that you can perform on integers, but we will start off with expressions that only contain multiplication, division, subtraction, and addition and then move on to more complex problems. (2 min)
* Introduction to the order of operations game…
  + Have the students count 1, 2 into 2 teams. Team 1 will move to the right side of the classroom. Team 2 will move to the left side of the room.
  + Directions to tell students- they are given a sheet with 15 expressions on them using only multiplication, division, addition, and subtraction. They are to solve each expression and show all work underneath each problem. The game board gives them hints on some of the answers (not all of the numbers on there are all the answers to the questions, so be careful). Use the order we just talked about. Group to get the most right and to show all their supporting evidence will win a prize. MAKE SURE TO TELL THEM – work should be written out as expression trees. Uses number one as an example. Write out on board to model expression trees.
  + Put up the game board on the smartboard. (answers of expressions on a word document)
  + There will be 15 expressions. Team who gets the most questions right with **supporting work** will win. Prize – each student on the winning team will get a piece of candy from the candy bin in our classroom.
  + (15 min)

Closure:

* Ask students if they know about PEMDAS? Ask what means…Parenthesis, Exponent, Multiply or Divide, Add or Subtract. We will talk about the other operations tm.
* Hand out homework due 6/29/10 – Introduction to the Order of Operations and Time Lines Homework
* (2 min)

Evaluation Procedure:

* Introduction to the Order of Operations and Time Lines Homework due 6/29/10

Additional Notes:

* Lebombo Bone powerpoint
* Hand back word problem questions from 6/25/10
* Word Problem Help Guide
* Order of Operations Game Expressions and Answers
* Order of Operations Game Expressions sheet (for students to do work on)
* Game board
* Introduction to the Order of Operations and Time Lines Homework
* Intro to order of operations and time lines answers

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Word Problem Help Guide

Two steps for solving word problems:

1. Translate the wording into a numerical equation
2. Solve the equation

Tips:

1. Read the whole problem
2. List information and identify the unknown variables. Make sure you attach units of measure to the variables (for example, gallons and miles)
3. Define the answer you are looking for and its units of measure
4. Keep your work organized. Make sure you label any diagrams and explain each step of your process.
5. Look for “key” words in the word problem that may give you a hint about how to solve the problem. Key words can indicate certain mathematical operations.
   1. Addition(+)
      1. increased by
      2. more than
      3. combined together
      4. total of
      5. sum
      6. added to
   2. Subtraction (-)
      1. Less than
      2. Fewer than
      3. Reduced by
      4. Decreased by
      5. Difference of
   3. Multiplication (\*, x)
      1. Of
      2. Times
      3. Multiplied by
   4. Division (/ , ÷)
      1. Per
      2. Out of
      3. Ratio of
      4. Quotient of
      5. Percent (divide by 100)

Order of Operations Game

Expressions and Answers

1. 3 \* 3 + 5 = 14
2. 8 ÷ 2 – 6 = -2
3. 9 + 2 = 11
4. 6 + 3 \* 8 = 30
5. 5 + 10 ÷ 2 = 10
6. 13 – 2 + 4 = 15
7. 12 ÷ 2 \* 3 = 18
8. 15 ÷ 5 – 6 = -3
9. 9 \* 5 = 45
10. 10 – 2 + 8 = 16
11. 14 ÷ 2 = 7
12. 6 – 2 + 7 \* 3 = 25
13. 12 + 8 ÷ 4 = 14
14. 13 – 1 \* 8 = 5
15. 8 \* 5 ÷ 4 = 10

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Order of Operations Game

Directions: Show all work as expression trees.

1. 3 \* 3 + 5 =
2. 8 ÷ 2 – 6 =
3. 9 + 2 =
4. 6 + 3 \* 8 =
5. 5 + 10 ÷ 2 =
6. 13 – 2 + 4 =
7. 12 ÷ 2 \* 3 =
8. 15 ÷ 5 – 6 =
9. 9 \* 5 =
10. 10 – 2 + 8 =
11. 14 ÷ 2 =
12. 6 – 2 + 7 \* 3 =
13. 12 + 8 ÷ 4 =
14. 13 – 1 \* 8 =
15. 8 \* 5 ÷ 4 =

Game Board

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 14 | 72 | 24 | 10 | 33 |
| 45 | 5 | 15 | 18 | -3 |
| 16 | 7 | 11 | 96 | 14 |
| -15 | 5 | 2 | 7.5 | 25 |
| -2 | 36 | 17 | 0 | -1 |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Introduction to the Order of Operations and Time Lines Homework

Directions: Solve the following expressions. Use the order of operations. Show all work using the expression trees that we talked about in class.

1. 5 \* 8 – 3 + 5 =
2. 18 ÷ 2 \* 6 =

1. 6 \* 5 + 6 ÷ 2 =
2. 24 ÷ 4 + 13 =

1. 15 \* 2 – 8 + 13 =

Time Lines

A time line is a number line marked off in dates rather than in integers. On the History of Mathematics time line below, dates labeled B.C.E. fall where the negative integers normally lie. Dates labeled C.E. replace the positive integers. Years given are dates of birth.

C.E.

B.C.E.

Plato

429

Aryabhata

526

Ptolemy

98

0

Plato

429

Hero

250

Euclid

330

Pythagoras  
569

Brahmagupta

640

Archimedes

287

Find the number of years between the given events. Write a subtraction expression. Then simplify.

1. the births of Euclid and Hero \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. the births of Pythagoras and Archimedes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. the births of Brahmagupta and Ptolemy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Legend has it that Rome was founded in 753 B.C.E. How many years after the founding of Rome was Plato born? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. One mathematician was born as many years before Ptolemy as Aryabhata was born after Ptolemy. Which one?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Which mathematician was born 1,069 years before Brahmagupta?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name: ANSWER KEY

Due Date: 6/29/10

Intro to order of operations and Time Lines homework

Directions: Solve the following expressions. Use the order of operations. Show all work using the expression trees that we talked about in class.

1. 5 \* 8 – 3 + 5 =

40 – 3 + 5 = 37 + 5 = 42

1. 18 ÷ 2 \* 6 =

9 \* 6 = 54

1. 6 \* 5 + 6 ÷ 2 =

30 + 3 = 33

1. 24 ÷ 4 + 13 =

6 + 13 = 19

1. 15 \* 2 – 8 + 13 =

30 – 8 + 13 = 22 + 13 = 35

Time Lines

A time line is a number line marked off in dates rather than in integers. On the History of Mathematics time line below, dates labeled B.C.E. fall where the negative integers normally lie. Dates labeled C.E. replace the positive integers. Years given are dates of birth.

C.E.

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Aryabhata

526

Ptolemy

98

0

Plato

429

Hero

250

Euclid

330

Pythagoras  
569

Brahmagupta

640

Archimedes

287

Find the number of years between the given events. Write a subtraction expression. Then simplify.

1. the births of Euclid and Hero: 250 - (-330) = 580
2. the births of Pythagoras and Archimedes: -287 - (-569) = 282
3. the births of Brahmagupta and Ptolemy: 640 – 98 = 542
4. Legend has it that Rome was founded in 753 B.C.E. How many years after the founding of Rome was Plato born?

-429 - (-753) = 324

1. One mathematician was born as many years before Ptolemy as Aryabhata was born after Ptolemy. Which one?

Euclid: 526 – 98 = 428... 98 – 428 = -330. 330 BCE Euclid.

1. Which mathematician was born 1,069 years before Brahmagupta?

Plato 640 – 1069 = -429. 429 BCE Plato.

Name: Abby Simons Date: 6/29/10

Lesson Title: Order of Operations Unit Title: Week 2

Grade Level: 8th

Objectives:

* Students will be able to recall the order of operations
* Students will be able to compute expressions using the order of operations and PEMDAS

Set Induction

* Take attendance
* Hand back any papers
* Have students to take out their homework logs and fill in tonight’s homework.
* Put the expression on the board… 8 + 3 \* 5… which operation do you do first? (multiply 3 by 5, then add 8)… the expressions we did yesterday in class and the ones for homework only had the arithmetic operations of multiplication, division, addition, and subtraction. Today we will learn how to calculate other expressions with other operations.
* (3 min)

Content Outline and Learning Procedures:

* Go over the homework from last night (intro to the order of operations and time lines worksheet). Collect homework when finished. (12 min)
* Have students take notes on the Order of Operations (write these notes in their notebook)
  + They should use the order of operations when an expression has more than one type of operation. Such as an expression with multiplication and subtraction.
  + Look at the expression and see what operations are used
    - First, perform the calculations that are in parenthesis. (show them that parenthesis look like this () perform this calculation first).
    - Second, calculate all exponents.
    - Then, perform all multiplication and division, working from left to right. (whichever comes first from left to right)
    - Finally, perform all addition and subtraction, working from left to right. (whichever comes first from left to right)
  + This is commonly referred to as PEMDAS
    - P = parenthesis
    - E = exponents
    - M = multiplication
    - D = division
    - A = adding
    - S = subtraction
    - One way of remembering PEMDAS is by the phrase “Please Excuse My Dear Aunt Sally”
  + (5 min)
* Before doing examples with all operations…must discuss exponents with students. STUDENTS MUST CONTINUE TO TAKE NOTES
  + Ask if they ever heard the term exponent or power before. Have them describe what they mean.
    - Exponents – another way to write out multiplication. Tells you how many times to multiply a number by itself. Exponents, or powers, are the number of times you multiply a base number by itself.
      * Def – xn = x \* x \* x \* x ….. (n number of x’s in the product). Where x = base. And n = exponent.
      * This is a very technical explanation of exponents that they may not understand…that is ok, they will learn that in the next couple years. All they need to know right now is that if you have a number to a power, it means to multiply the number by itself that many times. Base is a number (the number that is being multiplied by itself). The power or exponent tells you how many times to multiply the base by itself.
    - Examples….try to have the students find each of the pieces (base, power,
      * 22
        + Base = 2
        + Exponent or power = 2
        + Multiply 2, two times
        + 2 \* 2 = 4
      * 23 
        + Base = 2
        + Exponent or power = 3
        + Multiply 2, three times
        + 2 \* 2 \* 2 = 8
      * 42
        + Base = 4
        + Exponent or power = 2
        + Multiply 4, two times
        + 4 \* 4 = 16
    - Students do these examples..
      * 53 = 5 \* 5 \* 5 = 125
      * 34 = 3 \* 3 \* 3 \* 3 = 81
      * 92 = 9 \* 9 = 81
  + (10 min)
* Now students will complete order of operations worksheet using PEMDAS. Practicing PEMDAS.
  + Have them draw out expression trees like they did yesterday. Students will work together to do pieces of the problems (tag-teaming). Call up one student to start, then pass to another, etc until expression solved. Each student is doing a different piece from the order of operations. When another student is explaining they must be paying attention and writing down the explanation.
  + 10 problems on worksheet. I will model the first one for the class.
  + (12 min)

Closure:

* Ask students what the order of operations is. PEMDAS! (correct way of evaluating expressions with multiple operations…parenthesis, exponent, multiply/divide, add/subtract)
* Hand out PEMDAS homework and construction paper (tell them to use that to publish their phrase or acronym) due 6/30/10
* (3 min)

Evaluation Procedure:

* PEMDAS Homework due 6/30/10

Additional Notes:

* Intro to order or operations and time lines homework answer key
* Practicing PEMDAS worksheet
* Practicing PEMDAS worksheet answers
* \*\*Construction paper for PEMDAS homework
* PEMDAS homework
* PEMDAS homework answers

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Practicing PEMDAS

Directions: Solve the following expressions using PEMDAS. Show your work.

1. 10 ÷ (3 + 2) =
2. 53 + 6 =
3. 4 \* 22 =
4. 7 + (6 + 4) \* 2 =
5. (32 + 4) \* 3 =
6. 42 – 30 ÷ 2 =
7. 14 + (3 – 7) =
8. 5 + (6 + 3) \* 2 =
9. 5 \* (2 + 3) – 7 =
10. (7 + 3) ÷ 2 =

Name: Answer Key

Date: 6/29/10

Practicing PEMDAS

Directions: Solve the following expressions using PEMDAS. Show your work.

1. 10 ÷ (3 + 2) = 10 ÷ 5 = 2
2. 53 + 6 = 125 + 6 = 131
3. 4 \* 22 = 4 \* 4 = 16
4. 7 + (6 + 4) \* 2 = 7 + 10 \* 2 = 27
5. (32 + 4) \* 3 = (9 + 4) \* 3 = 13 \* 3 = 39
6. 42 – 30 ÷ 2 = 16 – 15 = 1
7. 14 + (3 – 7) = 14 + (-4) = 10
8. 5 + (6 + 3) \* 2 = 5 + 9 \* 2 = 23
9. 5 \* (2 + 3) – 7 = 5 \* 5 – 7 = 25 – 7 = 18
10. (7 + 3) ÷ 2 = 10 ÷ 2 = 5

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PEMDAS Homework

1. Create your own phrase or acronym to remember the order of operations, PEMDAS. (the example from class today was “Please Excuse My Dear Aunt Sally”). Be prepared to present your phrase or acronym in class tomorrow. **Use the construction paper to publish your phrase or acronym. Be creative and school appropriate.**

Use this space to plan your ideas.

1. Evaluate the following expressions using the order of operations. SHOW ALL WORK.
   1. (24 – 8) ÷ 4 =
   2. 11 \* (4 – 2) + 16 =
   3. 20 ÷ 2 + 8 \* 2 =
   4. (7 \* 3) – (4 \* 2) =

Name: Answer Key

Due Date: 6/30/10

PEMDAS Homework

1. Create your own phrase or acronym to remember the order of operations, PEMDAS. (the example from class today was “Please Excuse My Dear Aunt Sally”). Be prepared to present your phrase or acronym in class tomorrow. Please be creative and school appropriate.

Students will present in class tm!!!

1. Evaluate the following expressions using the order of operations. SHOW ALL WORK.
   1. (24 – 8) ÷ 4 = 16 ÷ 4 = 4
   2. 11 \* (4 – 2) + 16 =11 \* 2 + 16 = 22 + 16 = 38
   3. 20 ÷ 2 + 8 \* 2 = 10 + 16 = 26
   4. (7 \* 3) – (4 \* 2) = 21 – 8 = 13

Name: Abby Simons Date: 6/30/10

Lesson Title: The equation and 1-step equations Unit Title: Week 2

Grade Level: 8th

Objectives:

* The students will be able to recall the order of operations
* The students will be able to solve 1-step equations

Set Induction:

* Take attendance
* Hand back any papers
* Have students take out homework logs and fill in their homework for tonight
* We will be learning about equations today. Ask students what they know about equations and solving for unknown variables. (an equation – mathematical statement that has two expressions separated by an equal sign. The expressions may contain a variable – an unknown you are trying to solve for).
* (3 min)

Content Outline and Learning Procedures:

* Have students take out homework from last night – PEMDAS homework. Have each student stand up and present their phrase/acronym…can help the other students see the order of operations with another explanation from their classmates. Then review the last section of the homework, map out using expression trees each step. collect homework. (7 – 10 min)
* First students will take notes on equations…
  + Definition of an equation – a mathematical statement that has two expressions separated by an equal sign. The expressions on the left and right sides of the equals sign are equal. Sometimes equations have variables (a variable is an unknown that you are trying to solve for) that can be on either side of the equations. To solve for the variable, you must isolate it and bring it to one side by itself. When solving equations, you must keep each expression on either side equal, so if you manipulate one side of the equation, you must do the same thing to the other side.
  + Variable – something that can be anything…. To get the students to understand this concept… ask them pick their favorite letter or geometric shape on their paper. … I will say “I know a way that all of these letters and shapes are the same.” Ask the students if they have any idea how that is possible. Because they are all variables! Have the students say what letter or figure they wrote. Point – a variable is ANYTHING!! Any letter, shape, picture, object, etc. stands for something else (usually what you are solving for).
    - Another use of the word in real life… if you are going to dinner at 6 and then to a movie at 8, you are not so sure how long dinner will take. It is a variable, unknown, do not know exactly how long it will take to eat. So in real life must allow more time in order to compensate for this unknown time at dinner.
  + (7 min)
* To show equivalence on both sides….
  + DEMONSTRATION! Show that 8 tbs and ½ cup of flour have the same quantity. We are using two different measuring tools (tbs and cup) which are our variables. If you adjust the quantity of each variable, you can see that they will be equal to eachother…show visually in a clear cup for both the tbs measurement and the cup measurement. Even though we used two different tools and made adjustments, we still have the same quantity. So, 8 tbs of flour is equal to ½ cup of flour, and both sides of the equation are equal to eachother.
  + (5 min)
* Do practice equations with the students at the board. Groups of three set around classroom at the boards. We will first solve equations using symbols as our variables.
  + Examples
    - 2• = 8 • = 4
    - 3 – 2 = • • = 1
    - 15 = • + 2 • = 13
    - • ÷ 4 = 8 • = 32
  + (5 min)
  + First we are solving for an object as our variable…next we will be solving for letters as variables. Two different ways to solve one-step equations.
* Solving 1-step equations worksheet. Students will do sections of the worksheet and then explain the steps and answers to the class. I will do the first question as an example on the board. (10 min)

Closure:

* Have students describe equations and variables.
* Hand out homework 1-Step equations due 7/1/10
* Sign homework logs
* (5 min)

Evaluation Procedure:

* Homework 1-Step equations due 7/1/10

Additional Notes:

* PEMDAS homework answers from 6/29/10
* Tbs, ½ cup, flour, 2 clear cups
* Solving 1-step equations worksheet
* Solving 1-step equations worksheet answers
* 1-Step equations homework
* 1-Step equations homework answer sheet

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Solving 1-Step Equations

Directions: Solve the following equations for the variable. Show all work.

1. 7x = 21
2. 8 + y = 10
3. f – 2 = 23
4. 6a = 24
5. e + 18 = -36
6. w ÷ 6 = 11
7. 8k = 36
8. q ÷ 5 = 10
9. 13t = 39
10. z – 9 = 13

Name: Answer Key

Date: 6/30/10

Solving 1-Step Equations

Directions: Solve the following equations for the variable. Show all work.

1. 7x = 21

X = 3

1. 8 + y = 10

Y = 2

1. f – 2 = 23

f = 25

1. 6a = 24

a = 4

1. e - 18 = -36

e = -18

1. w ÷ 6 = 11

w = 66

1. 8k = 36

k = 4

1. q ÷ 5 = 10

q = 50

1. 13t = 39

t = 3

1. z – 9 = 13

z = 22

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1-Step Equations Homework

1. Directions: Solve the following equations for the unknown variable! Show all work!
   1. -52 = k – 52
   2. 111 + f = 100
   3. 5y = 25
   4. w ÷8 = 64
   5. 7 + x = 60
2. Make your own equation and solve for your variable. Follow similar format of the problems we were solving today in class.
3. Explain in your own words the definitions of mathematical equations and variables.

Name: Answer Key

Due Date: 7/1/10

1-Step Equations Homework

1. Directions: Solve the following equations for the unknown variable! Show all work!
   1. -52 = k – 52

k = 0

* 1. 111 + f = 100

f = -1

* 1. 5y = 25

y = 5

* 1. w ÷8 = 64

w = 512

* 1. 7 + x = 60

x = 53

1. Make your own equation and solve for your variable. Follow similar format of the problems we were solving today in class.

See students answers

1. Explain in your own words the definitions of mathematical equations and variables.

See students answers

Name: Abby Simons Date: 7/1/10

Lesson Title: 2-Step equations and word problems Unit Title: Week 2

Grade Level: 8th

Objectives:

* The students will be able to solve 2-step equations
* The students will be able to evaluate word problems

Set Induction:

* Take attendance
* Hand back any papers
* Have students take out their homework logs and fill in their homework for tonight.
* We will be doing more equations today that have more steps. We did 1-step equations yesterday, today they will look at equations that take more steps to solve.
* (3 min)

Content Outline and Learning Activities:

* Have students take out homework from last night – 1-Step equations. Review homework with students. When finished reviewing, collect homework. (7 min)
* Talk about 1-step vs 2-step equations. Yesterday we looked at 1-step equations cause it only took one operation to solve for the unknown variable. Today we will look at two step equations. Ask the students what they think a two step equation is…(takes two operations to solve for the variable). (2 min)
* Practicing two-step equations on the board. Have the students write out the work and answers these problems in their notebook, but when they are done, write the answers on the smartboard in the front of the classroom
  + Examples
    - 15 = 2m + 3 m = 6
    - 5 = y ÷ 3 – 9 y = 42
    - 7 = 6r – 17 r = 4
    - 25 – 13f = -14 f = 3
    - m ÷ 7 – 3 = 0 m = 21
    - 9n + 18 = 81 n = 7
    - 4x – 17 = 31 x = 12
    - v ÷ 8 – 9 = -13 v = -32
  + (10 min)
* Hand out worksheet on solving equations. Solving equations Practice Problems. Have the students work in pairs (partner them up) to solve the equations. (10 min)
* Count off students into two teams, 1,2. 1 on right side of room, 2 on left side of room. We will play a review game of the material we learned so far. Team who wins gets a prize. (10 min)

Closure:

* Have students talk about equations and expressions. Things they have noticed about them when working with them this week. Clarify any problems with equations and variables.
* No homework!! Happy July 4th!

Evaluation Procedure:

* No Homework!

Additional Notes:

* 1-Step equations answer sheet from 6/30/10
* Solving equations Practice Problems
* Solving Equations Practice Problems Answers
* Game Problems, answers, and directions. (prize of candy in room).

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Solving Equations Practice Problems

Directions: Write an equation. Then solve.

1. Bill purchased 4 pens for $8.00. Find the cost of two pens.
2. A waitress earned $73 for 6 hours of work. The total included $46 in tips. What was her hourly wage?
3. Tehira has read 110 pages of a 290-page book. She reads 20 pages each day. How many days will it take to finish?
4. Sue rode 24 miles on her bike over 4 days. She rode the same amount each day. How many miles did she ride per day?
5. During one week Bob ran a total of 50 miles. On Sunday he ran 8 miles, Monday he ran 5 miles, Tuesday he ran 7 miles, Wednesday he ran 4 miles, Thursday he ran 5 miles, and Friday he ran 3 miles. How many miles did Bob run on Saturday?

Name: Answer Key

Date: 7/1/10

Solving Equations Practice Problems

Directions: Write an equation. Then solve.

1. Bill purchased 4 pens for $8.00. Find the cost of two pens.

4x = 8 x = 2

So, 2 pens cost $4.

1. A waitress earned $70 for 6 hours of work. The total included $40 in tips. What was her hourly wage?

$70 = $40 + 6x x = $5.00 per hour

1. Tehira has read 110 pages of a 290-page book. She reads 20 pages each day. How many days will it take to finish?

110 + 20P = 290 P = 9 days

1. Sue rode 24 miles on her bike over 4 days. She rode the same amount each day. How many miles did she ride per day?

24 = 4x x = 6 miles

1. During one week Bob ran a total of 50 miles. On Sunday he ran 8 miles, Monday he ran 5 miles, Tuesday he ran 7 miles, Wednesday he ran 4 miles, Thursday he ran 5 miles, and Friday he ran 3 miles. How many miles did Bob run on Saturday?

50 = 8 + 5 + 7 + 4 + 5 + 3 + x x = 18 miles on Saturday

Math Game Questions and Answers

1. -5 – 8 = -13
2. 13 + 22 = 35
3. (-3) – 8 = -11
4. |45| + (-2) = 43
5. 6 \* 8 = 48
6. 32 /4 = 8
7. |13| = 13
8. |-25| = 25
9. Find the opposite of 5 = -5
10. Find the opposite of -32 = 32
11. 7 \* 3 – 9 = 12
12. 32 + 17 = 26
13. (3 + 2)2 – 8 = 17
14. 4x – 17 = 31 x = 12
15. 8 + x/2 = -7 x = -30
16. 43 + y = 2 y = -41
17. 16 – 8 = c c = 8
18. 35 \* 8 + 16 1960

35 = 243; 243 \* 8 = 1944

Students will be on two teams competing to get the correct answers. I will keep track of points for the team. I will write the problems on the board (one at a time) and the first team to raise their hand and have a correct answer gets a point. Team with highest points wins.